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ABSTRACT

This economics simulation game complements the third grade Gold Mining Unit developed by Project Social Studies at the University of Minnesota. The simulation is designed for three purposes: 1) to reinforce the prior learning which occurs in the gold mining camp unit; 2) to involve eight-year-olds in the process of solving simulated economic problems; and, 3) to evaluate whether eight-year-olds can effectively engage in simulation activities of this nature. A lexicon of terms and major concepts is provided for the teacher that lists: supply, demand, barter, capital, goods, service, corporation, interdependence, and speculation. Also included are: 1) behavioral objectives; 2) activity planning instructions; 3) student and teacher game roles; 4) rules, starting steps, instructions for play; and, 5) evaluation tips. Results from a sample of 44 third grade children in two classes were not statistically significant (KR reliability .40) as based on a situational test, however, subjective evaluation by teachers and independent observers indicated high interest, realism, and involvement for students. (Author/AWW)

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# THE GOLD MINING CAMP: A SIMULATION GAME

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# INTRODUCTION

The Gold Mining Camp Simulation Game complements the third grade Gold Mining Unit of Project Social Studies (University of Minnesota). The simulation is designed with three purposes. First, it is intended to reinforce the prior learnings which occur in the gold mining camp unit. Second, it is designed to involve eight-year-olds in the process of solving simulated economic problems. Third, it is designed to evaluate whether eight-year-olds can effectively engage in simulation activities of this nature.

There is a scarcity of available evidence in the literature regarding the ability of young children to participate in simulations. An apparent lack of commercial educational simulation activities for early childhood education also attests to the minor attention simulation activities have received at this level. The absence of materials from both sources may result from the failure of researchers to report findings or the failure of commercial establishments to make capital investments in such a venture. A third explanation rests with the conclusion that there is a dearth of research and experimentation with simulation activities in the first three grades of schooling.

## The Sample Population

The sample consisted of forty-four third grade children in two classrooms. There were twenty-six male and eighteen female subjects. Forty-two were Caucasian and two were non-Caucasian. The subjects attended the J. W. Arnold School in Jonesboro, Clayton County, Georgia. For a more detailed description of the group, see "Description of the Clayton County Groups," R and D Center, University of Georgia, Athens, Georgia, (n.d., mimeographed).

The Simulation Game

Objectives:

A major organizing principle in the functional economy of any community is supply and demand. The similarities between that principle in a California mining camp of the 1850's and communities of today are apparent. Students can readily transfer the notion of limited resources - unlimited wants from the 1850 historical setting to the contemporary world. Therefore, by simulating the economic functioning of an early mining camp, the students will attain the following objectives.

A. At the conclusion of the simulation the student will be able to describe verbally at least three consequences of the demand for a good surpassing its supply.

   1. The price of a unit increases.
   2. The availability of the desired unit decreases.
   3. The production of units usually increases as demand continues to increase.

B. At the conclusion of the simulation the student will be able to describe verbally at least three consequences of a large amount of capital becoming available in a locale.

   1. The demand for goods and services increases.
   2. The demand for certain items surpasses the supply; i.e., new clothes, homes.
   3. The price for a unit of goods or service increases.
   4. Speculation occurs in segments of the economy as people freely spend money.

C. At the conclusion of the simulation the student will be able to describe verbally two consequences of speculation investment.

   1. Large amounts of capital are invested in activities or goods which may increase in value with time.
   2. The value of certain goods is inflated due to increased investment attention in them.

D. At the conclusion of the simulation the student will be able to identify verbally two conditions which result in economic cooperation and interdependence between individuals.

   1. Cooperation occurs when the capital or labor of a number of individuals is necessary to attain a specific end product, i.e., large mine, partnership.
   2. Interdependence occurs when two or more items are essential for production and the owners of each provide the respective components, i.e., pick and shovel.

The students are not expected to parrot the above examples of the objectives. It will be much more suitable if they can verbalize a situation in which the "price of good" will increase. In addition, the teacher should not use advanced economic terminology which the students will probably not comprehend. Instead, for example, speculation can be described as follows:

> A man buys a farm. He is not a farmer nor does he know how to farm. Instead, he keeps the farm until someone else wants to buy it. Then he sells it for a greater amount than he paid, thus making a profit.

Key Concepts:

| | | |
|---|---|---|
| Supply | Capital | Corporation |
| Demand | Goods | Interdependence |
| Barter | Services | Speculation |

Lexicon of Economic Terms:

The teacher should use the lexicon to introduce economic terms and ideas to the students. It is important that students are aware of the terms as the simulation gets underway. The students are not expected to rotely respond the definition of any single term, but rather be able to describe the process involved in respective economic activities.

> Supply - The amount or number of things ready for use or for sale. A supply of 10 shovels is not enough if 15 miners each need a shovel.
>
> Demand - The number of people who want to buy or use the supply. If 15 miners each need a shovel, the demand is for 15 shovels. If only 10 shovels are ready, the demand is greater than the supply.
>
> Barter - When money is not used, people trade items of value. Trading a horse for a cow is barter. Trading a pick for a shovel is barter. Money does not change hands, but items of value to the people involved change hands.
>
> Capital - (All things that have value can be capital.) In some countries bright stones are capital. They are used as money. In the United States money is capital. A house is capital because of its value. A car is capital. The school is capital. Capital can be converted to money.
>
> Goods - Goods are tangible items that have value. Goods are produced to meet demands of people. All goods are capital. Goods are usually for sale. A dress is a good. Shoes are goods. A pick is a good. Food is goods.

Service - Service is work that helps other people. The salesman in a store helps people select what they want to buy. He is providing a service. Carpenters build things. They are providing a service.

Corporation - A legally organized business or activity that is owned by two or more people. Two or more businessmen may start a new business. They work together and share the profits.

Interdependence - Two or more things that depend upon each other in any way. City people depend upon farmers for food. Farmers depend upon city people for cars and tractors. Miners depend upon storeowners for goods. Miners depend upon carpenters for services. In return the storeowners and carpenters depend upon the miners for sales and jobs.

Speculation - Holding capital for a time in hopes that its value will increase. Someone may buy a farm. They keep it until someone else offers them more than what they paid for it. Then they sell and make a profit.

Planning the Simulation:

The simulation is planned to perpetuate itself after the initial activities. Therefore, the physical layout is essential.

The service/goods people should be located in one area that represents a settlement. The farmers will be the only service/goods people to locate away from the settlement. The miners will be able to locate wherever they want. However, 24 original gold strikes will be placed in various areas of the room/school grounds. These should be the 24 smallest finds. As the miners work, the teacher can distribute or call out strikes to the various groups. Care should be taken to award one or two mine sites a far greater amount, so the students witness the survival/production aspect of functional economics.

Once the students have reached their mine site and staked a claim, they are free to go about solving the problems they face; namely, procurement of food, shelter, clothing, and equipment. The storeowners should be awaiting them. It may be necessary to stop and assess the predicament of a student who fails to react. Peers may be able to offer suggestions regarding ways in which the individual can acquire the things needed and mine.

All of the miners will have to journey to the settlement or farms to buy things. When the good or service desired is sold out, the individual miner is faced with a problem situation. The cards are stacked so some miners will run out of food and money. The teacher should anticipate those problems.

The length of the simulation activity will depend upon numerous variables, some being: the teacher, the class, interest, facilities available, discussion and evaluation. The simulation should be organized to represent days in a typical sense that meals are eaten, jobs are performed, etc. The time necessary to reconstruct 15-20 days of life in an early mining camp will provide ample opportunity for the activity to operate successfully. By trading role positions the simulation can be started anew the second or third day. This gives the students an opportunity to participate as two or three community members as well as improve their ability to predict the types of situations which developed unexpectedly on a prior day. In nice weather the simulation can be held out-of-doors and the students can establish camp sites, mine sites, service sites, and routes of travel.

The students should be involved in much of the actual planning. Role positions in the camp can be drawn by using a deck of cards (each card denoting a position). Students may also trade off positions with others if they desire. The students will thus become readied through planning involvement for expectant roles in the simulation.

A few days prior to initiating the simulation game, the students should begin to construct the props and artifacts necessary. Much of the material can be prepared during art sessions, while some material can be acquired and prepared at home.

Materials (for about 48 students):

1. 950 pieces of drinking straws of four different colors about one inch in length:

   450 yellow - 1 dollar each
   200 green - 2 dollars each
   150 silver - 5 dollars each
   150 gold - 10 dollars each

2. 150 styrafoam cups labeled as canned food commodities

3. 110 sacks stuffed with paper and labeled as:

| | | |
|---|---|---|
| corn | beans | salt |
| flour | feathers | coffee |

4. Construction paper outlines to indicate:

20 - shovels
20 - picks
10 - pans
10 - axes
10 - saws
20 - shirts
20 - trousers
10 - jackets
10 - pair of boots
20 - pair of gloves

5. Service labels to indicate:

Blacksmith
Carpenter
Barber
Restaurant

6. Gold strikes

8 - 5 dollar sacks of gold
12 - 20 dollar sacks of gold
16 - 50 dollar sacks of gold
5 - 100 dollar sacks of gold

Each gold strike has in it the following list which will guide students in disposing of their gold/money. For example, a gold strike of 100 dollars has the following directions:

1. You must exchange gold for money at the bank (teacher).

2. You must pay a carpenter $40 to build a sluice box or rocker crib.

3. Follow these guidelines in spending money:

Groceries and supplies (about half the gold strike) -farms $20
-stores $20

Clothing $5

Carpenter $40

Miscellaneous $15 (restaurant, barber)

Students' Roles:

Four Storekeepers: They have approximately one-half of all the commodities available. They also buy items from the farmers for resale.

Two Blacksmiths - Each makes five shovels and five picks which are sold to the miners.

Two Barbers - Each cuts hair for whatever price feasible.

Four Restaurant Owners - Two are in business with general meals. Two specialize in high priced meals. They buy supplies from the stores and farmers.

Six Carpenters - They build rocker cribs, sluices.

Six Farmers - They produce commodities on their farms for sale to miners and businesses. They begin with about one-half the commodities.

Twenty-four Miners - The miners arrive at the gold mining town with none of the supplies they require for prospecting and mining. They have the following amounts of money:

Six have - $20 each
Six have - $30 each
Six have - $50 each
Six have - $80 each

Teacher's Role:

The teacher's responsibility in addition to directing the construction and collection of props is to supervise and officiate the activity. Ground rules which the teacher must enforce are:

1. Anyone who wants to can be a miner. However, they must have a pick and shovel, or be associated with someone who does.

2. The teacher will act as judge in settling disputes between claims.

3. The teacher acts as the banker and exchanges money for gold strikes.

4. The teacher distributes the gold strikes to various mines as the simulation progresses.

STATEMENT OF RULES: To be read to the students

The activity we are beginning today involves creating an early gold mining camp. (We are going to be concerned with the problems of working and living in the camp.)

The rules of the game are:

1. Obtain the tools you need to mine. Each miner has to have a pick and a shovel. A mine may have more than one miner. To dig for gold a miner, or mining partners, must have a pick and a shovel.

2. Obtain the food that you need to live for three or four days. When you run out, return to the settlement and buy more.

3. Store owners are going to charge as much as they can for the supplies they sell. As the demand increases, so will the price. If something costs more money than you have, you may need to put your money with someone else's to have enough.

4. The object in the end is to have the most money and live the best life. However, directions found in the gold strikes must be followed.

Steps in Starting:

1. Have the necessary props on hand.

2. Read and explain the rules to the class.

3. Develop simulation lay-out in accordance with facilities available.

4. Distribute gold strikes with directions.

5. Miners then begin obtaining the tools and supplies they need to initiate the mining process, or opening gold strikes.

Simulation Game in Practice

The simulation activity was scheduled in the cafeteria of the school. The simulation was initiated at 12:30 p.m. and terminated at 2:30 p.m. All the props were prepared prior to the activity by Arnold School and R & D Center staff members involved in the activity.

The tables in one part of the cafeteria were arranged to represent the central business district of the mining camp (Fig. 1). Store owners and other commercial establishments were located there. That section of the room became the focal point for the ensuing bartering and selling of goods and services. Ample space permitted numerous students to gather in the central business district area at any time. The responses of the students to interaction activities centered in this area were recorded by tape recorder and still film.

As set forth by the guidelines in the simulation activity, each student was assigned a gold mine community role to play. After observing the simulation in operation for approximately thirty minutes, the teacher called the students together for a formative evaluation session. At that time the following conditions which had developed were discussed:

1. The circulation of money

2. The perishibility of goods

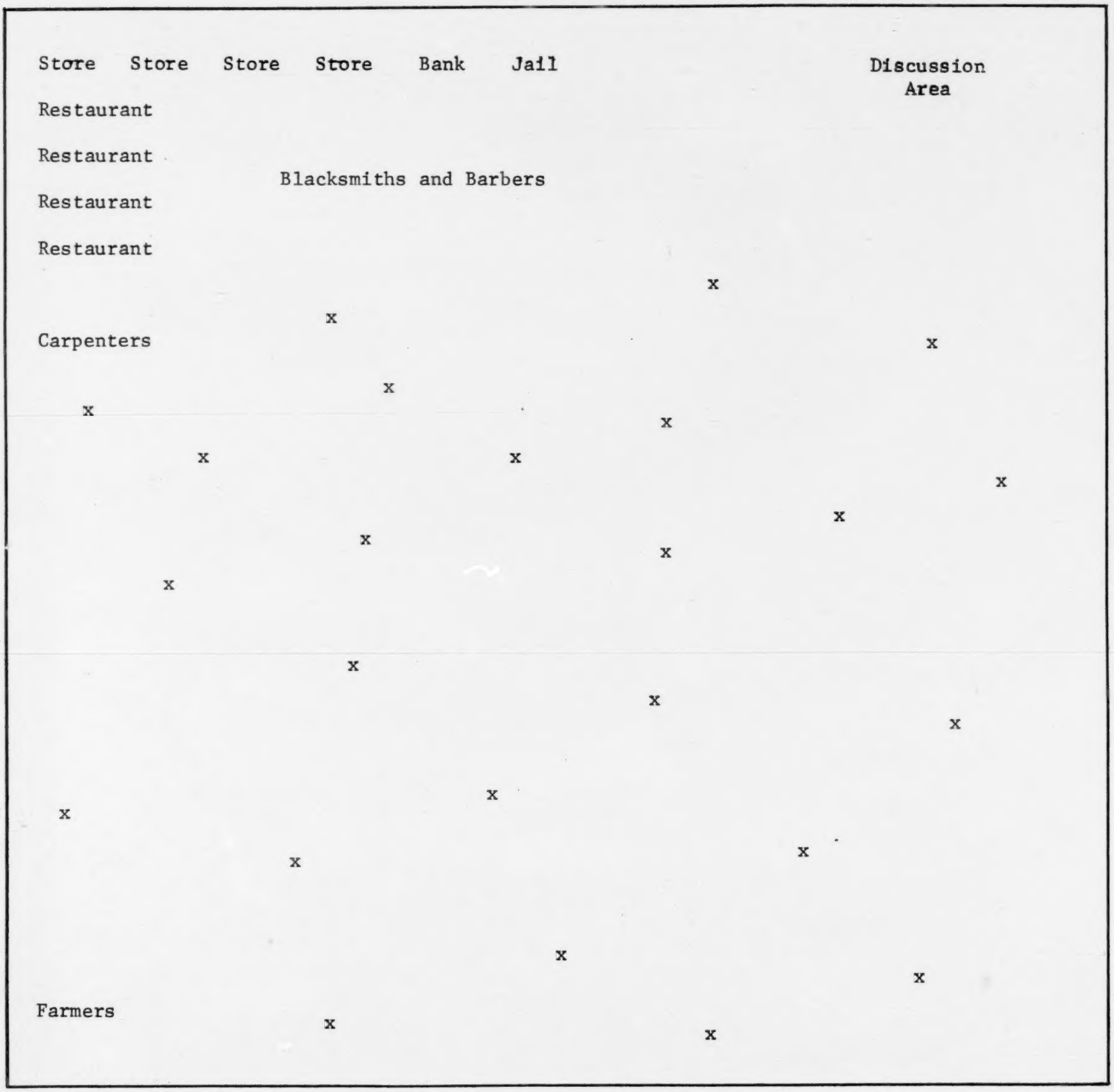
3. The acquisition of essential services and their cost

4. The matter of generally rising or inflated prices

Up to that point in the simulation there had been no mention of social problems inherent in the operation of a early mining town. The matter was not to lie dormant for an extended period of time, even though social organization was not a major objective of the unit. The students raised the question of law and order and the presence of a sheriff. Upon realizing that no sheriff was present, a spontaneous "riot" situation developed in which students robbed the bank (to the surprise of the teacher in charge of banking) and freely robbed and stole from each other. The sequence of events in the "riot" situation was not planned, nor was it anticipated from eight year olds.

After calm was restored the students again gathered to discuss the notion of law and order and the application of social control. A sheriff was elected to enforce rules and maintain a jail. However, no rules were established by the students at that time. The resumption of the activity again resulted in a breakdown of law and order. The sheriff was at liberty to make arrests, but no guidelines for arrest and prosecution had been established. Although physical violence did not erupt, there were instances of confrontation between thief and intended victim, with the intended victim expecting protection from the law officer.

Fig. 1




(x = mine site)

The students again formed a large discussion group to evaluate the situation. They agreed upon the series of actions that would be enforced by the group against those who violated mutually accepted laws. The activity of the simulation resumed with a quite different tone. Interaction, both social and economic, was carried out in a more structured fashion. A small number of law violators were reported to the sheriff who arrested them and detained them in the local jail. Because of time factors, the simulation was terminated before judicial action could be taken.

The high involvement by students in the simulation was indicative of the ability and interest of eight-year-olds to participate in this type of learning activity. Their ability to discuss and evaluate timely developments in the operation of the community is representative of their adaptation to a new dynamic learning situation.

Evaluation:

A situational test was designed to measure the effects of the simulation activity. A two week time lapse occurred between the activity and administration. The objective of the instrument was to measure the degree to which the children understood basic economic behavior as identified in the objectives of the activity. Situations to examine the spontaneous social aspects of the simulation were not designed. The general structure of the instrument was such that the children could relate aspects of the simulation to situations contemporary to their lives. This experiment was the first time the eighteen item multiple-choice instrument was used and its $KR_{20}$ realiability was .40. Therefore, analysis based on the instrument was dismissed.

During a summative evaluation the students were asked the price of a specific good during the opening minutes of the simulation. The beginning base price was usually given as the response. They were then asked what the price was during the later periods of activity. Responses varied from "it cost much more" to "the price increased twenty dollars." They were then asked why the price had increased. Responses generally included the greater amount of money in circulation and the increased demand for certain goods. Most students selected tools and food as the first to increase in price, followed by non-essential items when more gold strikes occurred. The students were then presented a hypothetical situation in which farmland near an urban center was being sold. They were able to trace the same pattern of inflated prices due to the large amount of capital found in an urban area and the desire of people to live in suburban locations. As a result, the cost of such land increases rapidly.

The teachers evaluated the performance of individual students as well as the group. They were especially impressed with the contributions made by "poor readers" and "behavior problems." The better students responded in the expected "academic fashion," while the less able students viewed the activity as a real-life situation where they were measured by economic success. The teachers were also impressed by the student initiated follow-up questions and discussions which lasted three days after the activity.

Independent observers from the school and R & D Center were equally impressed with the simulation. High interest, involvement, and socio-economic interdependence gave every student an opportunity to contribute to the community's functioning. In addition, during the activity the students were able to economically evaluate their success, failures, and the manner in which they made economic and social decisions. The simulation was judged by observers to represent a realistic and accurate experience for the children.